

Rapid assessment of pandemic and seasonal influenza vaccine uptake in the UK: an internet based survey

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Abstract

Objectives:

To describe uptake of the influenza A H1N1v (swine flu) and seasonal influenza vaccination programmes, and to compare the attitudes to and motivations of individuals to take these vaccines.

Design: internet-based questionnaire

Setting: UK population

Participants: 566 participants in an online influenza monitoring system.

Main outcome measures: the timing and uptake of pandemic and seasonal influenza vaccines and stated reasons why people chose to have/not to have these vaccinations.

Results: A majority of those in priority groups (healthcare workers and those with underlying health conditions) reported being offered a pandemic specific vaccine, although not all chose to take up this offer. In all groups aside from healthcare workers, the uptake of the pandemic influenza vaccine was significantly lower ($p < 0.001$) than for the seasonal influenza vaccine. Seasonal vaccination took place earlier in the autumn than pandemic influenza vaccination. Individuals who chose to be vaccinated predominantly did so to protect themselves and to protect those around them. Those who chose not to be vaccinated most commonly reported that they did not believe themselves to be at high risk (pandemic influenza vaccine: 203/265, 95% CI [71.0% 81.6%]; seasonal influenza vaccine: 262/320, 95% CI [77.2% 89.5%]); a sizeable minority (63/265 95% CI [18.8% 29.4%]) of those who chose not to have the pandemic influenza vaccine mentioned side-effect concerns as a reason for their choice.

Conclusions: Despite the high profile and the urgency of the pandemic influenza vaccination campaign, it did not achieve a significantly higher coverage in any groups, including the priority groups, than the seasonal influenza vaccination campaign, and was slower to be administered. Survey respondents reported that they chose not to receive a pandemic influenza vaccine because they did not believe that they were in high-risk groups.

What this paper adds: This paper is the first to report the timing of uptake of both the seasonal and pandemic influenza vaccines over the autumn and winter of 2009/10. It is also the first to explore the reasons why people choose to have or not to have these two vaccines.

What is already known on this subject: The English Department of Health has published data on the number of pandemic vaccines that have been used, but little detail is given about who receives these vaccines and how quickly the different target groups were vaccinated. Studies carried out before the pandemic or before the release of the pandemic vaccine suggested reasons why people thought they might have/avoid a vaccine but, as yet, little is known about why, in practice, people chose to receive or to reject the pandemic influenza vaccination.

Introduction

Following the emergence of a novel strain of influenza A (H1N1v2009 “swine flu”) in April 2009, rapid efforts were made to develop an effective vaccine. Vaccines became available in the autumn of 2009, and sufficient quantities were ordered to cover the entire UK population.

It became rapidly clear that those with certain underlying health conditions were at considerably greater risk of adverse consequences of an infection (1,2). In August the decision was taken to prioritise these groups, along with front-line health-care workers, for vaccination (2). The risk groups for the pandemic and seasonal vaccines were similar with two notable exceptions: otherwise low-risk pregnant women were included in the pandemic influenza recommendation, and otherwise low-risk elderly individuals (65+) were excluded (although they remained in the target group for seasonal vaccination) (2). Vaccination began in the UK in late October 2009. Subsequently, children aged between 6 months and 5 years were also targeted for vaccination.

This study compares the uptake of the pandemic and seasonal influenza vaccinations. The timing of vaccine delivery and the reasons why people choose to have, or not to have, the vaccines are also compared.

Methods

Study population

In July 2009 the UK flusurvey (www.flusurvey.org.uk) was launched. It is an online influenza monitoring system. Members of the public were asked to register and give weekly reports of their symptoms (if any). On registering, users were asked a number of background questions, including whether they had any health conditions; whether they had frequent contacts with children, patients, the elderly, or large numbers of people; and whether they received a

seasonal influenza vaccination in 2008/09. The UK flusurvey has approximately 5500 registered users, of whom about 700 report their symptoms each week.

Survey

Since mid-December 2009 participants have also been asked to complete a vaccination questionnaire, asking whether they have been offered, had, or intend to have pandemic and/or seasonal influenza vaccines this season; those who received a vaccine were asked what date they received it.

Participants were asked the reasons behind their choices. Participants could give more than one response. Each participant can contribute only one vaccination questionnaire, but participants were able to update their answers as their circumstances changed.

To mirror the UK vaccination priorities, individuals were divided into those who reported that they had any of the following (chronic heart disease, diabetes, asthma, other chronic lung disease, pregnant, immunocompromised, other chronic disease (e.g. chronic renal disease)) – referred to as the “risk group”, those who reported frequent contact with patients – referred to as “health-care workers”, and those who fell into neither category – referred to as “others”. This category was further divided into those over 65 years old and those who are under 65.

Differences in proportions of individuals in each group choosing to receive the two vaccines were tested using the McNemar test; the same test was used to test for differences in reasons behind vaccination choices, restricting the sample to those individuals who made the same choice for both vaccines.

Results

Five hundred and sixty six participants had completed the questionnaire by 21st January 2010. Of these 67% were women and 11% were over 65 years of age. The distribution of the sample by risk group is shown in Table 1. Comparing our data with data on estimates of the size of the risk groups it is apparent that our survey oversamples both health care workers and risk groups (approximately 18% of England’s population is in a risk group (3)).

Uptake of vaccine

		Offered vaccine	Offered and had/intend to have vaccine	Had vaccine	Had/intend to have vaccine
Health care worker (n=53)	Pandemic	74%	45%	43%	49%
	Seasonal	62%	38%	36%	40%
Risk group (n=135)	Pandemic	59%	47%	45%	57%
	Seasonal	73%	62%	63%	65%
Other 65+ (n=27)	Pandemic	30%	11%	7%	22%
	Seasonal	81%	67%	70%	70%

Other < 65 (n=353)	Pandemic	15%	9%	8%	20%
	Seasonal	24%	17%	18%	22%

Table 1: vaccine uptake behaviour.

A majority of those in priority groups reported being offered both seasonal and pandemic specific influenza vaccines. Vaccine uptake was, however, higher for the seasonal vaccine for all groups but health care workers (Figure 1) (coverage in: health care workers 43% pandemic, 36% seasonal; risk group 45% pandemic, 63% seasonal ($p < 0.0005$, McNemar test of difference in proportion)); other 65+ 7% pandemic, 70% seasonal ($p < 0.0001$, McNemar test of difference in proportion); other <65 8% pandemic, 18% seasonal ($p < 0.0001$, McNemar test of difference in proportion). Differences in coverage are associated with differences in the fraction in each group offered a vaccine.

There were no significant changes in seasonal flu vaccination behaviour: in all groups, the numbers of individuals choosing to receive a seasonal influenza vaccine in 2009/10 and in 2008/09 were not significantly different.

Timing of vaccine

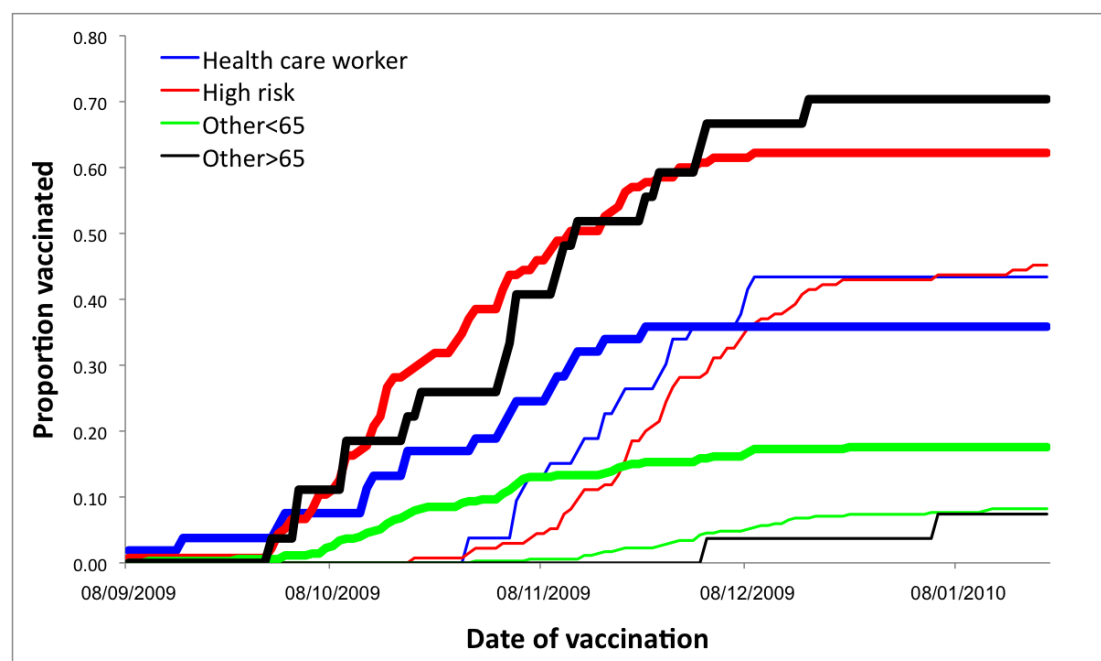


Figure 1: Uptake of seasonal (thick lines) and pandemic (thin lines) influenza vaccines over time in each group.

Figure 1 demonstrates that the pandemic influenza vaccine was not distributed until some time after the seasonal influenza vaccine. Uptake of the seasonal vaccine began approximately a month earlier than the pandemic vaccine.

Preference of vaccine

Of those offered both vaccines, there was no significant preference for one over the other (proportions of those offered both who had/intended to have each

vaccine were: health care workers (n=30), 73% pandemic, 57% seasonal; risk group (n=72) 81% pandemic, 82% seasonal; other 65+ (n=4) 50% pandemic, 100% seasonal; other <65 (n=30) 73% pandemic, 80% seasonal).

Reasons for choices

Individuals who chose to be vaccinated had a variety of reasons (Figure 2): to protect themselves, to protect others, and because they were in a high-risk group. Unsurprisingly, individuals in the risk group were most likely to report that they opted for vaccination because they were in a high-risk group, while more health care workers reported that they chose vaccination to protect those around them. In all groups, the reasons for vaccination were very similar for both vaccines.

Individuals decided not to be vaccinated predominantly because they did not think they were at high risk, although side-effect concerns were also mentioned. Reasons were broadly similar for both vaccines; however, amongst those who did not intend to receive either vaccine concerns about vaccine side effects were stated more often for the pandemic specific vaccine than the seasonal influenza vaccine (p<0.0001, McNemar test of difference in proportion), particularly noticeable amongst health care workers and others under the age of 65.

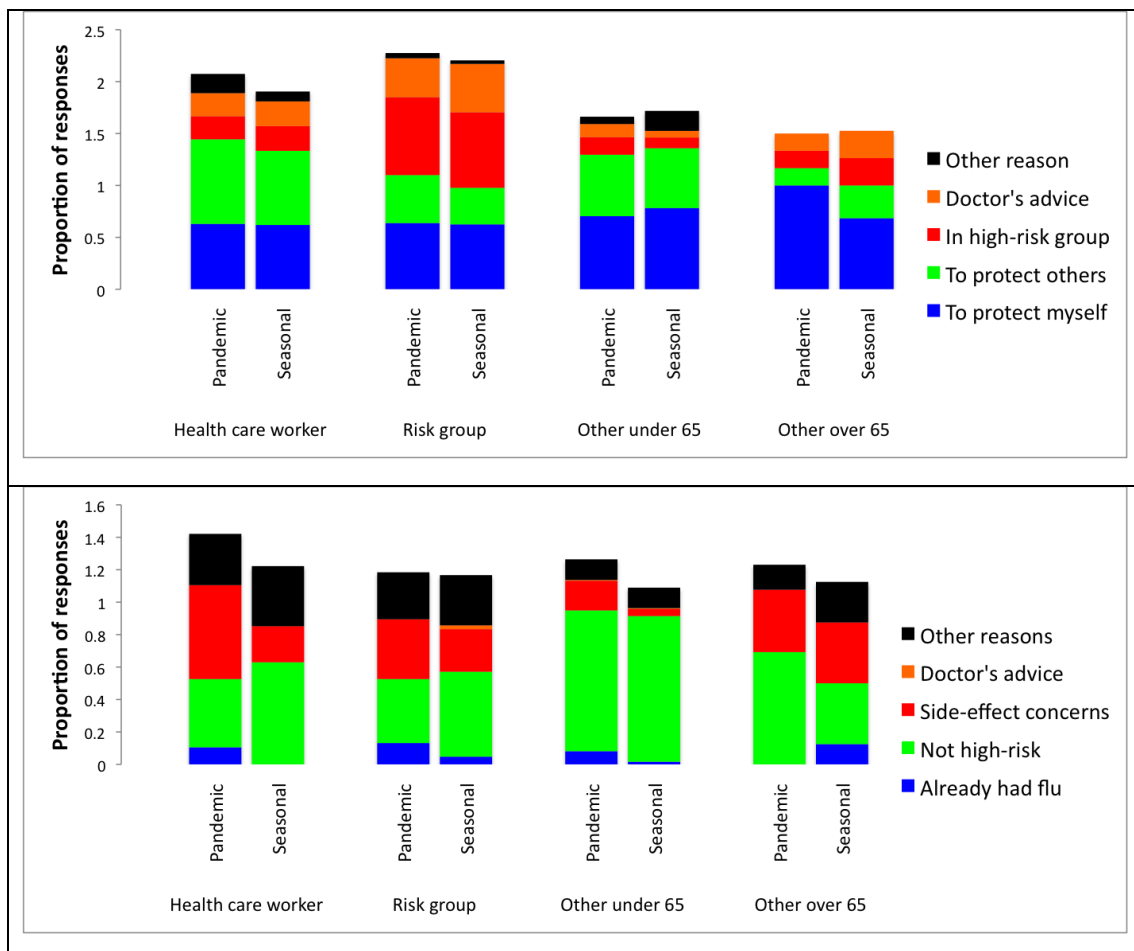


Figure 2: Reasons for vaccination choices. Top: reasons why individuals reported receiving/intending to receive vaccination; bottom: reasons why individuals reported not intending to receive vaccination.

Discussion

Pandemic influenza vaccine uptake was highest among health care workers and those with health conditions, while seasonal influenza vaccine uptake was highest in other individuals over 65 years old and those with health conditions. Those with health conditions and others (both over 65 and under 65) reported higher levels of uptake of the seasonal influenza vaccine than the pandemic vaccine, while levels were approximately the same in health care workers. Uptake was slower for the pandemic specific vaccine. As respondents did not seem to differ in their reason for vaccination, this slow uptake may have been associated with constricted supply or inefficient call-up compared with the seasonal vaccine. Coverage for the pandemic specific vaccine only started to saturate around mid December, by which time the incidence of H1N1v was at a very low level relative to its peaks in July and October (4). Those who opted to be vaccinated (with either vaccine) did so to protect themselves, with the belief that they were in a high-risk group being a strong motivating factor. In contrast, the belief that they were not at high risk was commonly stated as a reason for choosing not to be vaccinated by those who opted against vaccination. Amongst health care workers the most common reason for not having the pandemic vaccine was concerns about vaccine side-effects.

Individuals self-select into the flusurvey, and so the sample cannot necessarily be regarded as being representative. Nevertheless the results presented here for seasonal influenza vaccine uptake are similar to published data from a very large sample of general practitioners for the 2008/09 season. For instance uptake in 2008/09 for the seasonal vaccine saturated at about 75% for the over 65s and 45% for the high risk under 65s (5). Within our sample population, 70% of the over 65s and 53% of the high risk under 65s reported having had a seasonal flu vaccine in 2008/09 thus, as far as previous vaccination behaviour is concerned, our sample appears broadly representative. The format of the survey (an internet-based questionnaire) limits the amount and quality of information that can be easily collected. Much more in-depth information could have been derived from using qualitative research and face-to-face interviews. Furthermore, we rely on self-report of vaccination history and risk status, which may not be accurate or immediately comparable with other definitions. For instance, an individual with mild asthma (who may not be offered the vaccine) would be categorised as being in a risk group if they reported their condition. Similarly, health care workers are defined here as being “in regular contact with patients” (i.e. front-line staff), whereas the coverage data provided by the Health Protection Agency are for any health care worker in contact with patients (not necessarily regular) (6).

There are no published studies on the uptake of the pandemic specific vaccine in the UK, although there have been a number of surveys of attitudes to vaccination (7, 8, 9, 10, 11, 12, 13), and previous studies on the uptake of the seasonal influenza vaccine in the UK (5). Attitudinal studies have either been carried out before the onset of the 2009 pandemic (8, 11, 14, 15) or before the vaccine was widely available (9, 10, 12, 13) and so were only able to measure participants' intentions regarding vaccination. Our study was able to ask about individuals' actual behaviour when offered vaccines, and their reasons for making their

choices. There has been an ongoing debate as to whether health care workers will accept the pandemic specific vaccine (10, 14, 15, 16). Our study suggests that this group was as likely to accept the pandemic specific vaccine as the seasonal influenza vaccine. Our study, as predicted by pre-pandemic or early pandemic surveys (8, 12, 14), identified the perception of being at low risk and concerns about side effects as being the most common reasons for refusing the vaccine. Side effect concerns were less likely to be mentioned as reasons for refusing a seasonal influenza vaccine.

This survey provides a rapid insight into vaccine coverage levels and the reasons for vaccination in different risk groups. It provides hypotheses that can be tested in more in-depth future studies. For instance, health care workers in our sample appeared no more likely to accept the pandemic influenza vaccine than the seasonal influenza vaccine, and the reasons behind this lack of enhanced uptake of the pandemic vaccine should be explored in more detail.

Competing interest declaration: All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare that WJE's partner works for GlaxoSmithKline, and so he declares a potential competing interest. [KTDE, NT, DP] have no non-financial interests that may be relevant to the submitted work.

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Details of contributors: all authors were involved in the design of the study, the analysis of data, and the presentation of results. KTDE and WJE drafted the paper. All authors approve the final version.

Ethics: The study has ethics approval from the Research Ethics Committee at the London School of Hygiene and Tropical Medicine. Participants give their informed consent to take part.

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All authors, external and internal, had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis

Data sharing: no additional data available

Supplemental files: vaccine questionnaires.

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